

1. A method of performing additive synthesis of digital audio signals in a recursive digital oscillator, comprising:

5 receiving digital audio signal frames wherein each digital audio signal frame includes a set of frequency, amplitude, and phase components represented as coefficients of variables in a mathematical expression, each digital audio signal frame thereby including a frequency coefficient representation;

forming converted frequency coefficients by linearly re-mapping of bits of
10 said frequency coefficient representation to bias audio reproduction accuracy toward low frequency signals; and

performing additive synthesis with said converted frequency coefficients.

2. The method of claim 1 further comprising the step of defining said frequency
15 coefficient representation with an exponent characterizing a floating-point range extension.

3. The method of claim 2 wherein said defining step includes the step of specifying said exponent to correspond to a right shift amount necessary to correct for
20 precision limitations introduced by limiting re-mapping coefficients to 16 bits.

4. The method of claim 3 wherein said receiving, forming, and performing steps are implemented utilizing a 16-bit fixed point processor.

25 5. The method of claim 1 wherein said receiving, forming, and performing steps are implemented utilizing a digital signal processor.

6. The method of claim 1 wherein said receiving, forming, and performing steps are implemented utilizing a field programmable gate array.
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7. The method of claim 1 wherein said receiving, forming, and performing steps are implemented utilizing a Very Long Instruction Word processor.

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8. The method of claim 1 wherein said receiving, forming, and performing steps are implemented utilizing a Reduced Instruction Set Computer.

9. The method of claim 1 wherein said receiving, forming, and performing steps are implemented utilizing a Residue Number System processor.

10. A computer readable memory to direct a processor to function in a specified manner, comprising:

a first set of executable instructions to receive digital audio signal frames wherein each digital audio signal frame has a set of specified frequency values expressed as a bit sequence;

a second set of executable instructions to transform said bit sequence to represent lower frequencies with more significant bits and higher frequencies with less significant bits; and

a third set of executable instructions to facilitate additive synthesis of said digital audio signal frames in a reduced-precision recursive digital oscillator.

11. The computer readable memory of claim 10 wherein said first set of executable instructions include instructions to identify a frequency coefficient representation of said specified frequency.

12. The computer readable memory of claim 11 further comprising a fourth set of executable instructions to define said frequency coefficient representation with an exponent characterizing a floating-point range extension.

13. The computer readable memory of claim 12 wherein said fourth set of executable instructions include instructions to specify said exponent to correspond to a right shift amount necessary to correct for precision limitations introduced by a reduce precision processor.